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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/037,945 03/10/98 FAZAN

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EXAMINER

MM91/0606

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FOURSON III, G

ART UNIT

PAPER NUMBER

2823

DATE MAILED:

06/06/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/037,945

Applicant(s)
Fazan et al

Examiner
George Fourson

Group Art Unit
2823



☒ Responsive to communication(s) filed on Apr 17, 2000

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-4, 8, 9, 11, 12, 14, 16, and 17 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-4, 8, 9, 11, 12, 14, 16, and 17 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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Claims 1 and 4 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1,4 and 5 of copending Application No. 08/565,991. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims are generic to the claims of the application (see MPEP 806.04(I)).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim 1,2,4,8,9,14,16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over German Patent 266885.

Germany '885 discloses formation of a field oxide by oxidizing a silicon substrate in a first stage comprising water vapor at 1000°C and a second stage comprising oxygen at atmospheric pressure. The reference discloses that the inclusion of HCl and/or chlorocarbon gas is optional. The reference discloses that the process is useful in MOS transistor production which necessarily includes formation of a gate oxide. The reference discloses that the first stage of the oxidation enables the process to be performed in reduced time. The abstract contains a typographical error in the last sentence of the "Use/Advantage" in that "less thick" should be --less time-- in view of the disclosure of the thickness previously in the sentence. It would have been within the scope of one of ordinary skill in the art to omit the first stage oxidation with the

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expectation that the concomitant disclosed advantages of such a step would not be obtained because it appears that the process could be performed without the first stage oxidation, although taking longer.

Claims 8-9 are drawn to a field oxide which would not be distinguished from the field oxide produced by such a process. The newly added recitation of performing the process without forming nitride occlusions would be obtained by the process discussed above because the same materials would be treated in the same manner as in the instant invention.

Applicant appears to argue that the reference must disclose elimination of the first step. However, this is not necessary. As discussed above, the reference suggests elimination of the step in disclosing the function of the step in the event that the disclosed function is not desired to be obtained. It is clear from the teachings of the reference that a field oxide could be produced by the second step alone although the process would be longer in duration.

In response to applicant's argument that the second stage must contain hydrogen, the inclusion of chlorocarbon gas is disclosed as optional as discussed above. Further, chlorocarbons need not contain hydrogen.

Applicant argues that he discovered the problem of nitride occlusion, or white ribbon, formation but also notes that "the phenomenon of silicon nitride occlusions was discovered by Kooi". Furthermore, Germany '885 discloses that the second stage eliminates white ribbon.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Germany '885 as applied to claims 1,2,4,5,8,9 and 10 above, and further in view of Marshall et al and Miyoshi et al.

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Germany '885 does not disclose oxidation at pressures greater than 5 atm or the temperature of performing the second stage. Marshall et al discloses the suitability of oxidation in oxygen at pressures of 140-500 atm and temperatures up to 880°C. Miyoshi et al discloses the suitability of oxidation in steam at 6.4 atm. It would have been within the scope of one of ordinary skill in the art to employ the processes of Marshall et al and Miyoshi et al for their disclosed intended purpose to achieve the oxidation steps of Germany '885. The choice of particular temperature for each step would be a matter of routine optimization within the teachings of the references (see Marshall et al, page 2411, the paragraph bridging col.1 and col.2). Marshall et al compares the disclosed process to one using 1atm at 1200°C (col.1). In view of this disclosure and the statement at col.2 that a "more optimum set of conditions can obviously be chosen from available data", the choice of particular pressure would have been a matter of routine optimization within the teachings of the reference.

Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marshall et al in view of Sze.

Marshall et al is applied as discussed above. The reference does not disclose oxidation at pressures less than 30 atm. Marshall et al compares the disclosed process to one using 1atm at 1200°C (col.1). In view of this disclosure and the statement at col.2 that a "more optimum set of conditions can obviously be chosen from available data", the choice of particular pressure would have been a matter of routine optimization within the teachings of the reference. Furthermore, Sze discloses the suitability of dry oxidation at pressures less than 30 atm on page 122. It would have been within the scope of one of


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ordinary skill in the art to employ the step of Sze for its disclosed intended purpose to achieve the oxidation step of Marshall et al in view of the disclosure of Marshall et al discussed above that the choice of conditions would amount to routine optimization. The formation of electrical devices is implied by the intended use of the oxide produced by Marshall et al as an isolation region.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0956. **See MPEP 203.08.**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner George Fourson whose telephone number is (703) 308-2544. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri, can be reached on (703) 306-2794. The fax number for this group is (703)308-7722(and 7724 and 7382). MPEP 502.01 contains instructions regarding procedures used in submitting responses by facsimile transmission.


George Fourson
Primary Examiner
Art Unit 2814

GFourson
May 31, 2000